First descriptions of the male of two species of *Teratocephalus* de Man, 1876 (Nematoda : Teratocephalidae)

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SUMMARY

The male of *Teratocephalus costatus* Andrássy, 1958 and *T. dadayi* Andrássy, 1968 are described and illustrated for the first time. The male of *T. costatus* is characterized by having a paired spicules 15 µm long and three pairs of genital papillae : one preanal (eleven annules anterior to base of anal prominence), one adanal, and one postanal (fourteen annules posterior to anal prominence) being the smallest. Gonad 175 µm long, c′ = 7. Tail tip bifurcated. The male of *T. dadayi* has paired spicules 15-18 µm long; three pairs of genital papillae : one preanal (ten-twelve annules anterior to base of anal prominence) one adanal and one postanal (fifteen annules posterior to anal prominence). Gonad 200-300 µm long. c′ = 8-9. Distal portion of tail constricted, non annulated; tail tip bifurcated. Measurements and illustrations of the females of these species are also given.

RÉSUMÉ

Première description des mâles de deux espèces de Teratocephalus *de Man, 1876 (Nematoda : Teratocephalidae)*

Les premières descriptions et illustrations des mâles de *Teratocephalus costatus* Andrássy, 1958 et *T. dadayi* Andrássy, 1968 sont données. Le mâle de *T. costatus* est caractérisé par des spicules pairs, longs de 15 µm, et trois paires de papilles génitales : une préanale (onze anneaux en avant du tubercule anal), une adanale, et la dernière, plus petite, postanale (quatorze anneaux en arrière du tubercule anal). La gonade mesure 175 µm. C′ = 7. Extrémité de la queue bifurquée. Le mâle de *T. dadayi* a des spicules pairs, longs de 15-18 µm; trois paires de papilles génitales : une préanale (dix-douze anneaux en avant du tubercule anal), une adanale, et une postanale (quinze anneaux en arrière du tubercule anal). La gonade mesure 200-300 µm; c′ = 8-9. Portion terminale de la queue typique, amincie, non annelée, à extrémité bifurquée. Mesures et dessins des femelles de ces espèces sont également données.

In 1982 a survey was conducted to determine the nematode fauna in soil from forest stands of *Quercus pubescens* and *Q. robur* in the Navarra region of northern Spain*. Among the free-living nematodes present were three species of *Teratocephalus : T. terrestris* (Bütschli, 1873) de Man, 1876; *T. dadayi* Andrássy, 1968; *T. costatus* Andrássy, 1958. Males of the latter two species were found for the first time, and are herein described and illustrated.

The samplings were performed once in each season in each site. The weight of each sample was 20 g of each horizon after homogenization of a larger sample. Specimens were extracted by means of Baermann's method, fixed in 4 % formalin, and mounted in lactophenol. Photographs were taken in a bright field light microscope equipped with an interference contrast system.

Teratocephalus costatus Andrássy, 1958
(Figs 1, 2)

MEASUREMENTS

Male (n = 1) : L = 413 µm; a = 37.5; b = 3.8; c = 5.3; c′ = 7.

Female (n = 24) : L = 430-447 µm; a = 23.5-26.0; b = 3.8-4.1; c = 4.6-5.0; V = 52-54.

DESCRIPTION

Male : Body ventrally arcuate when heat relaxed. Cuticle thick, coarsely annulated, with eight longitudinal ridges extending throughout most of body length.

* Project nº 0220 : " Effect of repopulation and exploitation forestal to the soil fauna ", of the Comision Asesora de Investigación Cientifica y técnica (CAICYT).

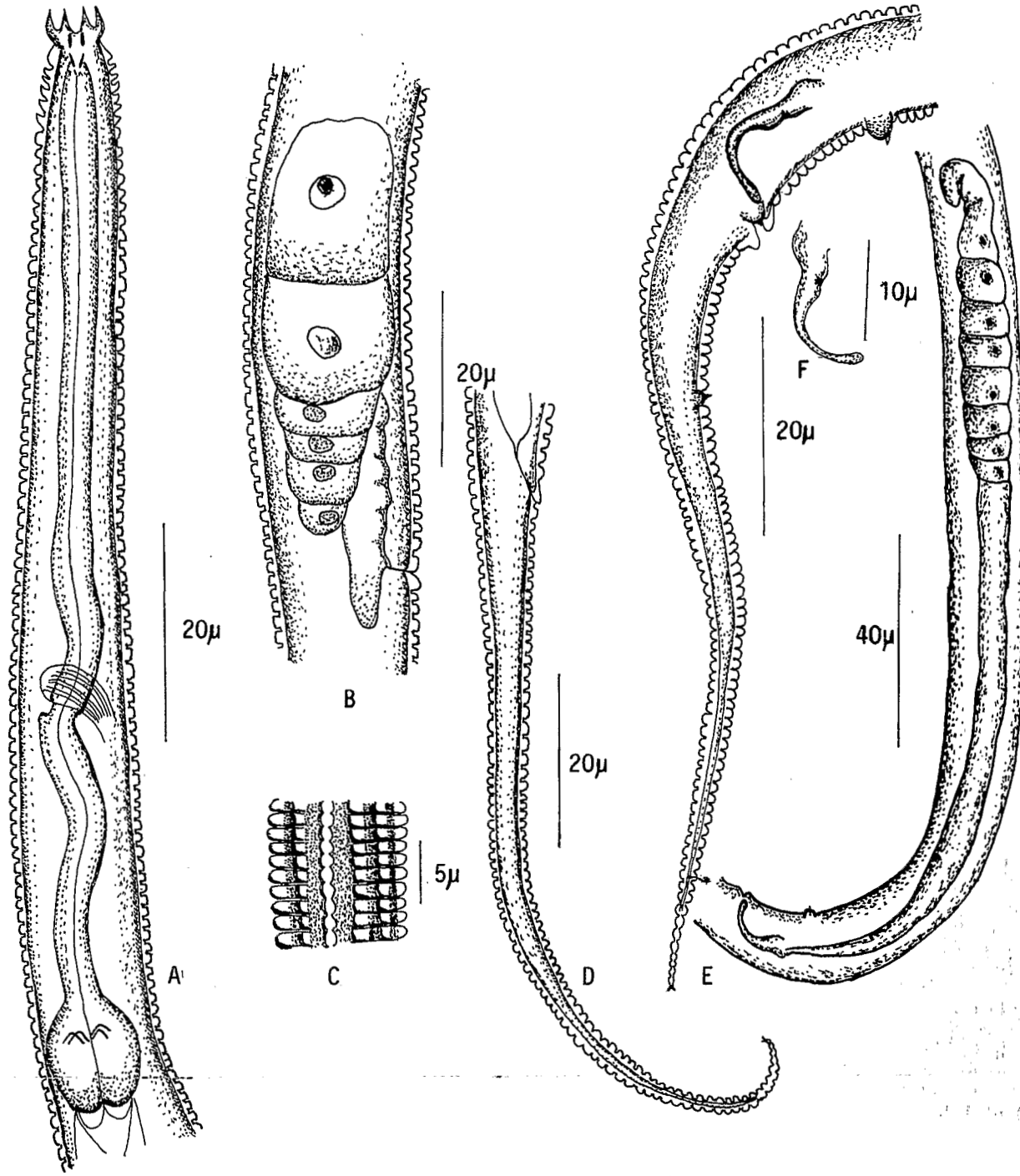

Fig. 1. *Teratocephalus costatus.* A : Female head and oesophagus; B : Female gonad; C : Longitudinal ridges of the cuticle; D : Female tail; E : Male spicule and tail; F : Spicule; G : Male gonad.

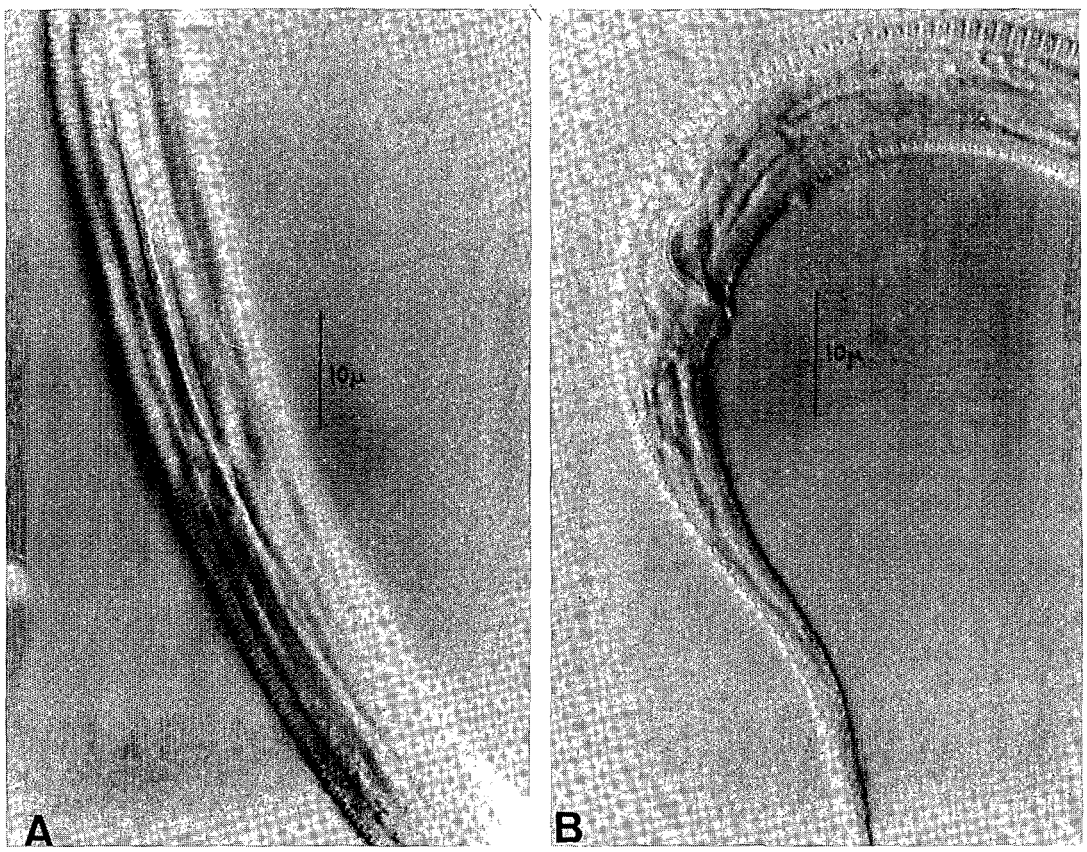

Fig. 2. *Teratocephalus costatus.* A : Male lateral field showing longitudinal ridges of the cuticle; B : Spicule.

Annules 1.4 µm, anteriad behind stoma 1.3 µm and posteriad in mid-tail region 1 µm; some annules anastomosing, particularly in neck region and posterior to anus; margins angular; first two annules small and compressed at base of head, next four to six annules recurved anteriorly. Lateral field protuberant, extending from just anterior or level with nerve ring to 4 annules posterior or level of anus, marked by two crenate incisures. Head width 6 µm, cephalic plicae 3.5 µm long, contour arcuate. Lips six, each with a perioral papilla. Stoma 5.0 µm long, metarhabdions elongated, oesophageal collar tapered, enclosing telostome. Oesophagus cylindroid, 104 µm long, constricted at level of, and immediately below nerve ring. Basal bulb ovate, 12 µm long, 9 µm wide, bulb flaps large, smooth. Nerve ring at 64 % of oesophagus length, 65 µm from head end. Cardia small. Gonad monorchic, telogonic, 175 µm long with very short anterior-ventral reflex which is 0.5 times the corresponding body diameter; spermatocytes in single row. Paired spicule strongly ventrally arcuate, 15 µm long, proximal end cephalated, distal end enlarged. Gubernaculum absent. Genital papillae in three pairs; one pair preanal, located eleven annules anterior to base of anal prominence, one adanal and one postanal located 14 annules posterior to anal prominence, the latter being the smallest. Cloacal lips protuberant, with a ventral fold of cuticle; anal body width 11 µm. Tail conoid, attenuated, 78 µm long; tail tip bifurcated.

Female : Monodelphic, prodelphic, ovary reflexed and short, postuterine sac short, 8 µm long. Vagina walls thick, length about 1/5 of corresponding body width. Tail 90-98 µm long, ABW 8 µm, tail 12-13 ABW. Similar to male in other morphological features.

Remarks

The observed females found have shorter body (430-447 *vs* 452-547 µm), and ratios (except for a), are outside the ranges given by Anderson (1969) for a Canadian population (b = 3.8-4.1 *vs* 3.4-3.7; c = 4.6-5.0 *vs* 5.5-6.8; V = 52-54 *vs* 55-60).

The males of *T. rugosus* Maslen, 1979 differ from those de *T. costatus* by the more anterior position of the preanal subventral genital papillae (13-17 annules from the base of the anal prominence *vs* 11 in *T. costatus*) and longer spicules (17-23.5 *vs* 15 µm).

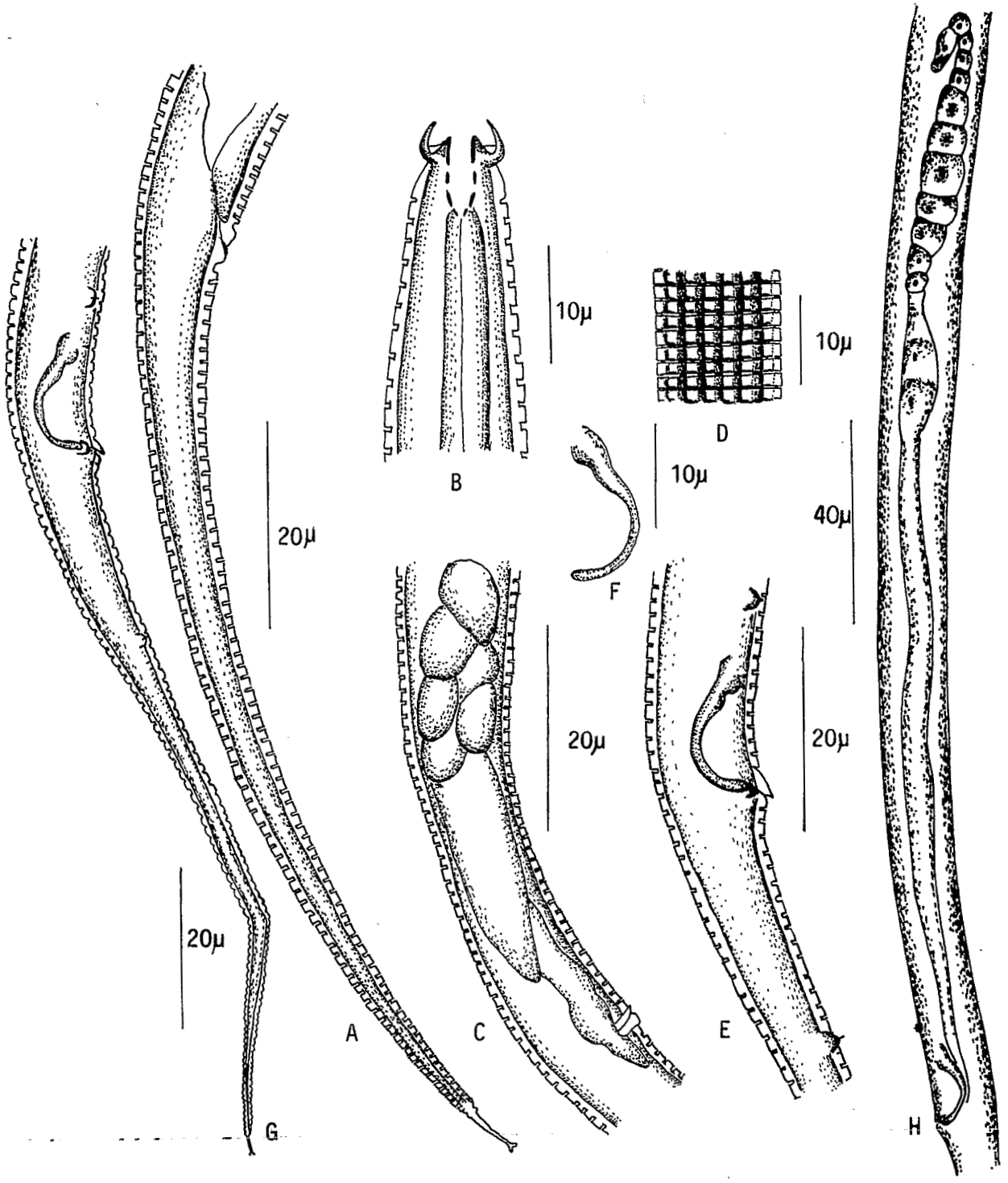

Fig. 3. *Teratocephalus dadayi.* A : Female tail; B : Female head; C : Female gonad; D : Male longitudinal ridges of the cuticle; E : Spicule and genital papillae; F : Spicule. G : Male tail; H : Male gonad.

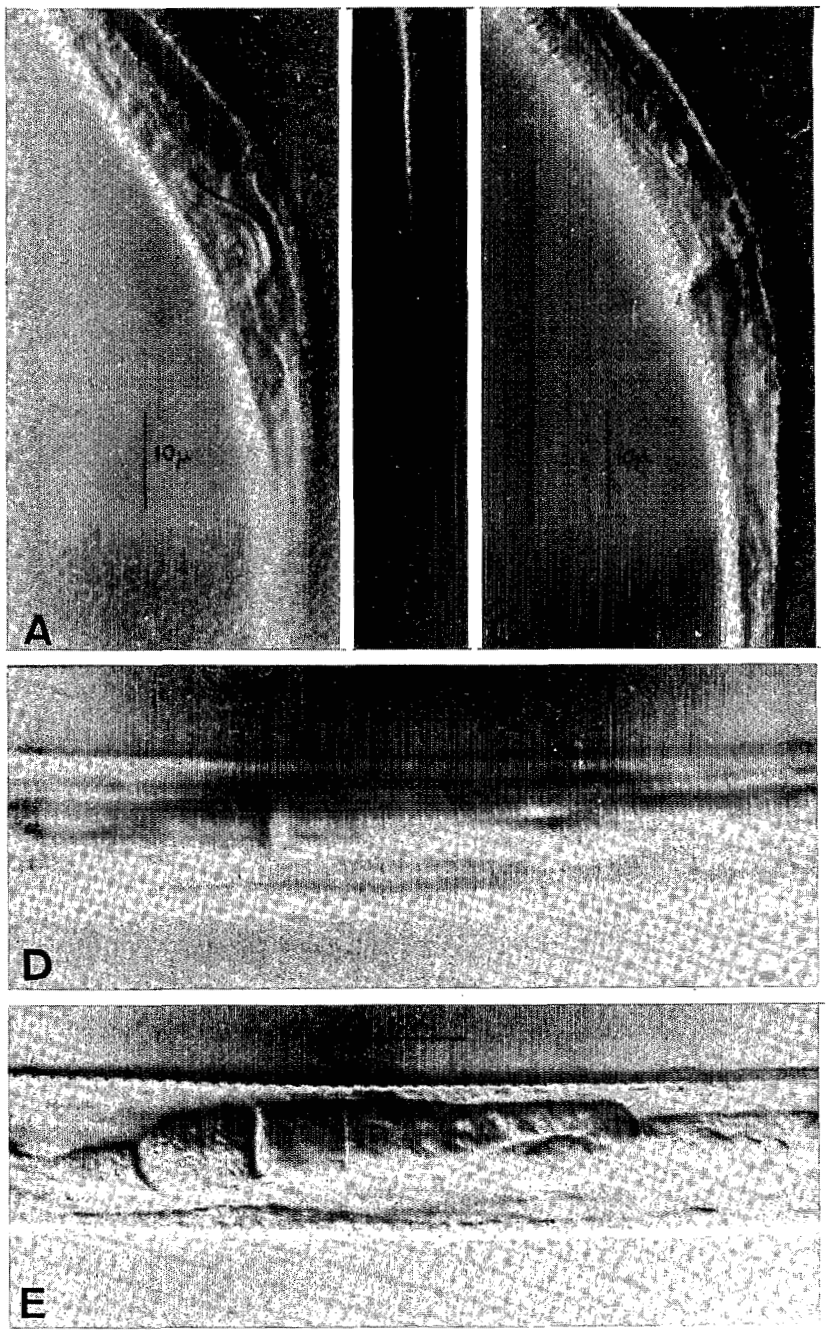

Fig. 4. *Teratocephalus dadayi.* A : Spicule; B : Male tail end; C : Genital papillae; D : Male longitudinal ridges of the cuticle; E : Male gonad.

HABITAT AND LOCALITY

Collected in litter from a forest stand of *Quercus pubescens* and *Q. robur* in Beunza, Navarra region in May, August and November 1982 from *Q. coccifera* in Unzué, Navarra region, Spain.

VOUCHER SPECIMENS

Slide nº CA0088/21 deposited in Museum of Zoology, Navarra University, Pamplona 31080, Navarra, Spain.

Teratocephalus dadayi Andrássy, 1968
(Figs 3, 4)

MEASUREMENTS

Male (n = 2) : L = 510-528 µm; a = 35.2-42.5; b = 3.9; c = 5.3-5.6; c′ = 8-9.

Female (n = 3) : L = 545-565 µm; a = 35.0-37.6; b = 4.1-4.3; c = 5.2-5.5; V = 54-56.

DESCRIPTION

Male : Body ventrally arcuate, cuticle coarsely annulated; with twelve longitudinal ridges near mid-body. Annules 1.8-2.0 µm wide, posteriad in mid-tail region 1 µm; some annules anastomosing anterior and posterior to anus; margins angular (more angular than in *T. costatus*). Lateral field protuberant, extending from anterior or level of nerve ring to 8-9 annules posterior or level of anus, marked by two crenate incisures. Excretory duct not discernible; excretory pore at level of nerve ring. Head width 7-8 µm about equal to neck width at base of stoma. Cephalic plicae 3.5-4.0 µm long, contours straight. Six lips, each bearing a perioral papilla. Stoma 7 µm long, metarhabdions elongate, 2 µm long. Oesophagus cylindroid, 130-135 µm long. Nerve ring at 60-63 % of oesophagus length, 80-85 µm from head end. Basal bulb 13 µm long, 9 µm wide; bulb flaps large, smooth. Cardia small. Gonad monorchic, telogonic, 200-300 µm long; testis with very short reflex about as long as the corresponding body diameter. Single row of long spermatocytes in anterior 1/4 of gonad. Spicules paired, ventrally arcuate, separate, 15-18 µm long. Gubernaculum absent. Three pairs of genital papillae : one preanal (10-12 annules anterior to base of anal prominence) one adanal and one postanal (15 annules posterior to anal prominence). Tail ventrally arcuate, conoid, elongated, 90-100 µm long; anal body-diameter 11 µm; distal portion of tail constricted, non annulated, tail tip bifurcated. Anus slightly protuberant and provided with a ventral cuticular fold.

Female : Monodelphic, prodelphic, ovary reflexed, longer in non-gravid female. Postuterine sac 7-8 µm long. Similar to male in other morphological features.

REMARKS

The observed females found have longer body (545-565 *vs* 338-443 µm), oesophagus (130-135 *vs* 99-120 µm) and tail (90-100 *vs* 56-73 µm) than those females described by Anderson (1969) in a Canadian population.

The males of *T. rugosus* Maslen, 1979 differ from those of *T. dadayi* by the generally more anterior position of the preanal subventral genital papillae (13-17 annules for the base of the cloacal prominence *vs* 10-12 in *T. dadayi*) and longer spicules (17-23.5 *vs* 15-18 µm).

Males of *T. dadayi* are longer than those of *T. costatus* (510-528 *vs* 413 µm), have longer oesophagus (104 *vs* 130-135 µm), tail (90-100 *vs* 78 µm), and gonad (200-230 *vs* 175 µm).

HABITAT AND LOCALITY

The specimens were collected in litter from an oak forest *(Quercus robur* and *Q. pubescens)* from Beunza, Navarra, Spain in August of 1982.

VOUCHER SPECIMENS

Slides nº CA 0216/16 & 17 deposited in Museum of Zoology, Navarra University, 31080 Pamplona, Navarra, Spain.

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REFERENCE

ANDERSON, R. V. (1969). Comparative morphology and descriptions of three new species of *Teratocephalus* from Canada. *Canad. J. Zool,* 47 : 829-840.

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